

Texas Instruments Incorporated and Iowa Utility Association

### Heat Loss Imagery

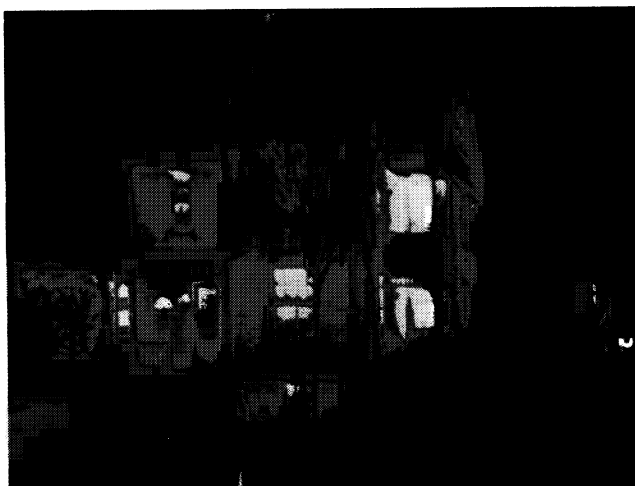
Since the oil embargo of 1973, NASA has been increasingly active in the national energy program, not only in technology development for new energy sources but also in promoting more efficient use of traditional fossil fuels. It is estimated that almost 30 percent of the fuel burned for heating residences and larger buildings escapes through inadequately insulated walls and roofs. To help focus public awareness of this heat loss problem, Lewis Research Center has used the remote sensing technique of infrared thermography to record roof temperatures from aircraft. Generally, infrared scanning devices produce images that show—by color or black-and-white shading differences—which buildings are losing heat to the outdoors and to what extent.

An example of Lewis' community service work in

energy conservation is an "outreach" project—undertaken in cooperation with the City of Cleveland and the East Ohio Gas Company—wherein Lewis used aerial thermography to produce heat loss images of sections of Cleveland. The cooperating agencies then followed up with public displays, neighborhood meetings and wide distribution of informational packages. The program, which has met with considerable success, was aimed at educating the public to the mechanisms of heat loss and motivating homeowners to install more effective insulation. As a by-product, it stimulated interest in thermographic services provided by commercial firms, examples of which are shown above and left.

Texas Instruments Incorporated, Dallas, Texas manufactures the RS-300 series scanners and conducts airborne heat loss surveys, such as Operation Sky Scan, in which some 900 communities in Iowa, South Dakota and Illinois were surveyed. The upper illustration is an example of the black-and-white imagery produced in Sky Scan. The shades of gray represent the amount of thermal energy radiating from the residential area pictured; houses with the lightest roof tones are losing the most heat. Large-area surveys like Sky Scan provide a method of evaluating heat loss in residential, commercial and industrial areas at relatively low single-building cost.

Daedalus Enterprises, Inc., Ann Arbor, Michigan produces several types of airborne infrared and multispectral scanners. The company has developed a patented ground-mobile technique to use this technology for scanning building sidewalls for heat loss. At left is a VANSKAN® thermograph showing varying degrees of heat loss through walls and windows of a residential building; white, red and yellow indicate greatest heat loss, blue and blue-green show losses of lesser degree. Texas Instruments, Daedalus and other companies conducting heat loss surveys are experiencing growing acceptance of their services among industrial firms, utilities, local governments, state and federal agencies interested in promoting heat loss awareness and inspiring corrective actions.



VANSKAN Thermogram, Daedalus Enterprises, Inc.

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